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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,087	01/10/2002	Wen-Chiang Huang		7505

7590 06/03/2005
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EXAMINER

NGUYEN, NGOC YEN M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/042,087

Applicant(s)

HUANG, WEN-CHIANG

Examiner

Ngoc-Yen M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
4a) Of the above claim(s) 7-12 and 23-25 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-6, 13-22 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 16, there is no clear support in the claims for "the dots".

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 9, 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norris et al (6,139,626).

Norris '626 discloses a method for patterning a quantum-dot solid according to a predetermined, three-dimensional pattern, the method comprising the steps of:

(a) preparing a template comprising a template material, the template having a plurality of pores therein, the plurality of pores comprising a negative of the predetermined, three-dimensional pattern;

- (b) preparing nanocrystals sufficient to fill the pores in the template, wherein the pores in the template are larger than the nanocrystals;
- (c) filling the pores in the template with the nanocrystals; and
- (d) forming a quantum-dot solid from the nanocrystals within the pores in the template, such that the nanocrystals are concentrated as close-packed nanocrystals within the pores in the template in the predetermined, three-dimensional pattern (note claim 1).

The colloidal nanocrystals can be dispersed in a solvent which is unreactive with respect to the template to provide a colloidal nanocrystal solution for filling the pores in the templates in step (c) (note claim 7).

The template can be removed by immerse in an etchant (note claim 30) or the voids can be refilled (note claim 31).

The template material must also be chemically compatible with the solvent used to disperse the nanocrystals; that is, the template must be insoluble and unreactive in this solvent. If the nanocrystals are to be sintered after filling the template (as will be described below), the template must further have a melting temperature higher than the melting temperature of the nanocrystals. If the template is to be eliminated or replaced after filling, a process must also be known for easy removal of the template from the structure. An example of a template material which satisfies all of the above criteria and is discussed further below, is silica. However, other materials, including, but not limited to, glasses, polymers, semiconductors, ceramics, metals, and

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biomaterials would also be suitable, depending on the final material desired (note column 6, lines 3-16).

Norris '626 further teaches that chemical agent known as the "surface cap" can be used (note column 6, lines 30-37).

The nanocrystals used can be GaAs (note column 7, lines 13-15).

The close-packed nanocrystals are in direct contact with one another but are not fused to one another (note claim 80). Thus, when quantum-dot solid in particle form is desired, it would have been obvious to one skilled in the art to break up the product of Norris '626 into particle form because the nanocrystals are not fused to one another. In Example 2, the unsupported quantum dot solid was fractured.

The difference is Norris '626 does not disclose the method of forming the polymer template.

However, since Norris '626 specifically teaches that polymer template can be used (note column 6, lines 14-15), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a polymer template, formed by any known method in the art, as long as the desired product can be formed.

Applicant's arguments filed March 15, 2005 have been fully considered but they are not persuasive.

Applicant argues that Norris method required the use of the prefabricated colloidal nanocrystals sufficient to fill in the pores of the template.

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It should be noted that the colloidal solution used in Norris '626 meets the claimed "precursor fluid". Applicant's claims do not exclude the use of such colloidal solution.

Applicant argues that the product of Norris was limited to the formation of bulk 3-D patterned materials, not thin film composite or quantum particles.

It should be noted that in Norris '626, it is disclosed that two-dimensional patterned material is known in the art (note column 1, line 24), thus, when such two-dimension patterned material is required, it would have been obvious to one ordinary skill in the art to use the process of Norris '626 to form such material. Also, as stated in the above rejection, the closed packed nanocrystals in Norris can be crushed to form particles of nanocrystals because the nanocrystals are not fused to one another.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stan Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (571) 272-1700.


Ngoc-Yen M. Nguyen
Primary Examiner
Art Unit 1754

nmn
May 31, 2005